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ABSTRACT

The relationship between the reflection-impulsivity dimension, a dimension of cognitive style, and selected aspects of oral reading behavior was investigated in this study. Fifteen impulsive and fifteen reflective average readers were selected from a population of 109 second graders. Measures of intelligence and reading comprehension were obtained, followed by reading and taping a story from a basal reader, thus providing a sample of oral reading behavior. Comparisons of the two groups were then made with respect to miscue frequency, semantic acceptability of miscues, hesitation and repetition frequency, and self-correction of miscues. Analyses of the data revealed significant relationships between measures of the reflection-impulsivity dimension and repetition frequency and self-correction behavior among the subjects. No significant differences were found with regard to the other variables. The findings suggest additional directions for investigating the role of cognition in the reading process. (Author/TO)

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A PSYCHOLINGUISTIC ANALYSIS OF THE ORAL READING BEHAVIOR OF SELECTED IMPULSIVE AND REFLECTIVE SECOND GRADE BOYS

Research Reports Session
10:45 - 11:45 a.m.
Friday, May 3, 1974

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Nineteenth Annual Convention of the International Reading Association
New Orleans, Louisiana

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A PSYCHOLINGUISTIC ANALYSIS OF THE ORAL READING BEHAVIOR OF SELECTED IMPULSIVE AND REFLECTIVE SECOND GRADE BOYS

Purpose of the Study

The purpose of this study was to explore the relationship of one aspect of cognitive style, the reflection-impulsivity dimension, and various aspects of oral reading behavior, namely miscue frequency, semantic acceptability of the miscues, hesitation and repetition frequency (indicators of reading fluency) and self-correction of miscues. More specifically, answers were sought for four questions:

1) Do impulsive children make more oral reading miscues than reflective children when intelligence and comprehension factors are controlled?
2) Are the miscues made by impulsive children more semantically acceptable than those made by reflective children?
3) Are impulsive children more fluent readers than reflective children, when fewer hesitations and repetitions are taken as evidence of greater fluency?
4) Do reflective children correct a greater percentage of their miscues than impulsive children?

Background and Literature

Until recently little attention had been given to the role of cognition in the reading process. But in the last ten years several reading authorities (12, 13, 14) have drawn attention to evidence supporting the view that reading involves cognitive processes.

One aspect of cognition which appears to be related to reading behavior is the tempo dimension of cognitive style, also referred to as the reflection-impulsivity dimension (10). The reflection-impulsivity dimension, according to Kagan (9) refers to a subject's tendency to be reflective (long decision times and low error scores) or impulsive (short decision times and high error scores) in solving problems that contain response uncertainty. However, the research in this area has been sketchy and in some cases the findings appear to be somewhat contradictory.

Kagan (9) and Banks (1), on the one hand report a significant positive relationship between measures of impulsivity and the number of errors made in oral reading. Lesiak (11) on the other hand reports finding no significant relationship between impulsivity and her measures of word recognition, comprehension, critical reading and rate of reading. These findings appear to be incompatible in light of traditional views of the relationship between oral reading errors and general reading ability in which errors have been taken as evidence of weakness (15).

A search of the literature revealed no studies of the relationship of the reflection-impulsivity dimension to semantic acceptability of miscues, hesitations, repetitions or self-correction of miscues, all aspects of reading which might well be influenced by a reader's dis-

position to be reflective or impulsive.

Procedures

The subjects in this study were 30 average second grade boys, drawn from nine classrooms in three predominately middle class suburban schools near a large midwestern city, representing high, middle and low socio-economic classes. The subjects were selected by first identifying 65 average readers from among a population of 109 second grade boys on the basis of their scores on the Reading subtest of the Metropolitan Achievement Test, with grade equivalent scores for the average readers ranging from 2.2 to 3.3. From this pool of average readers 15 boys were identified as reflective (long decision times and low error scores) and 15 were identified as impulsive (short decision times and high error scores) on the Matching Familiar Figures Test (MFF) (8), a test of the reflection-impulsivity dimension.

The California Test of Mental Maturity and the California Achievement Test - Reading were administered to provide a basis for controlling for possible variance due to intelligence and comprehension ability. Then, individually, each subject read orally, while being tape recorded, a story from a basal reader, thus generating a total of 2813 miscues, 626 hesitations and 877 repetitions which were later coded onto a typescript of the story and subsequently analyzed according to the correction and semantic acceptability components of the Goodman Taxonomy of Reading Miscues (7).

A t test was used to test the significance of differences between the reflective and impulsive groups on measures of verbal intelligence, nonverbal intelligence, full scale intelligence, vocabulary, compre-

hension and total reading. When this analysis revealed that the difference between the groups' nonverbal intelligence scores was significant (mean IQ = 106.07 for reflectives and 99.87 for impulsives), while differences on the other variables were not significant, a one-way analysis of covariance was used to control for between-group differences on the nonverbal intelligence variable when testing for significance of differences between the two groups on the major variables of the study. The Chi square procedure was used to test for significance of differences with regard to distributional frequencies of the different types of miscues, hesitations, repetitions and correction attempts.

A partial r correlation procedure (4) was used to determine the degree and significance of correlation between the reflection-impulsivity dimension and various variables while partialling out effects that might be due to nonverbal intelligence.

Findings

Significant differences between the reflective and impulsive groups were found with regard to the following:

1. The reflective subjects made more repetitions (adjusted mean = 36.65) than did the impulsive subjects (adjusted mean = 21.81), even when the differences in nonverbal intelligence were controlled. (See Table 1)
2. The reflective readers corrected a greater percentage of their miscues (adjusted mean = 21.04%) compared to the impulsive reader's self-correction (adjusted mean = 13.76%)

This was true for the total corpus of miscues even when the intelligence factor was controlled. However, when only one-time miscues were considered the differences were significant only when the intelligence factor was not controlled. (See Table 2)

3. Group membership, i. e. whether a child was in the reflective or impulsive group, correlated with percentage of miscues corrected (partial $r = 0.38$, $p < .01$) in the direction of the reflective children correcting a higher percentage of their miscues.
4. Response time on the MFF correlated positively with the percentage of miscues corrected, partial $r = 0.5949$ ($p < .01$).
5. Number of errors on the MFF correlated negatively with the percentage of miscues corrected, partial $r = 0.4078$ ($p < .01$).
6. In a related finding, nonverbal intelligence scores correlated positively with the percentage of miscues that were semantically acceptable but not corrected ($r = 0.3641$, $p < .05$).

No significant differences were found between the two groups with regard to:

1. Number of miscues (one-time or total), even when means were adjusted for differences in nonverbal intelligence (adjusted mean = 88.90 for reflectives (R); 98.64 for impulsives (I) when considering the total corpus of miscues. (See Table 3)
2. Percentage of miscues that were semantically acceptable within the context of the total passage which included miscues made acceptable through self-correction (adjusted mean = 45.23% for R; 45.50% for I).
3. Number of hesitations (adjusted mean = 21.84 for R; 19.90 for I).

4. The relative number of hesitations followed by correct identification of the word (31% for R; 33% for I), omission (41% for R; 46% for I) or other miscue (28% for R; 21% for I).

Wide variation was observed from individual to individual within each group on each of the dependent variables.

Discussion, Conclusions and Implications

Although internal validity was established by use of statistical controls and tests, limitations of the generalizability of the results of this study due to the sample size and the selection procedures should be noted. Hence, the following conclusions can only be made with regard to the population of subjects in this study.

It was anticipated that the impulsive readers would make significantly more miscues than the reflective readers, similar to the findings reported by Kagan (9), but they did not. One cannot conclude however, that impulsive children in general do not make more miscues than reflective children. It should be remembered that the sample of subjects in this study was drawn from average readers. Average readers were chosen deliberately in order to be reasonably sure that each subject could read the same story, yet make some miscues. But this constraint may account for at least part of the variance in findings of this study and that of Kagan (9). Further study of this question with a much larger sample, including good and poor, as well as average readers, is needed in order to be more conclusive regarding the relationship of reflection-impulsivity dimension to miscue frequency.

With regard to semantic acceptability of miscues, there appears to be no significant difference between the two groups. But perhaps more important than this is the descriptive information obtained, namely, that

on the average 45%, nearly one-half, of all miscues made by these average readers--in both groups--were judged to be either meaningful in the context of the story or were self-corrected by the reader.

The findings related to hesitation frequency suggest that there is no difference between the two groups with respect to this aspect of reading fluency.

However, with respect to repetitions, used also as an indicator of fluency, the impulsive readers were the more fluent. But these findings appear to also have implications regarding whether repetitions should be considered errors. The traditional view has been that the more a child repeats, the poorer reader he is (3). While this may be true to a certain extent, reading ability alone appears not to be the only factor involved. Note, that although the reflective subjects in this study made significantly more repetitions than impulsives there was no significant difference between the two groups' comprehension scores. These findings appear to have important implications for diagnosticians and classroom teachers. For example, when interpreting a child's oral reading--in using informal reading inventories or in the reading circle, for example--one should realize that at least some of the repetitions a child makes may be due to variation in cognitive style rather than to weakness in general reading ability alone.

With regard to self-correction of miscues it should be noted that all subjects corrected at least some of their miscues without being prompted to do so. In fact, on the average the impulsive group corrected over 13% while the reflective group corrected over 21% of their miscues.

But while children in both groups self-corrected many of their miscues, the reflective group corrected a significantly greater percentage than the impulsives, a finding which was not surprising in that according

to Kagan (9) reflective children appear to reflect more over their choices and hence, would appear to be more likely to detect and correct more miscues than would impulsive children. This fact may be helpful in thinking about the cause of a higher incidence of repetition among reflective children than among impulsives, noting that many repetitions (5, 6, 7) are made in order to correct or attempt to correct miscues. It may well be, then, that some repetitions are made just to check to see if what was said was right.

But the finding of a significant difference between the two groups in percentage of miscues self-corrected, raises what appears to be a very important question about how important overt self-correction of miscues is as far as comprehension is concerned. As has been noted earlier, there was no significant difference between the groups in comprehension scores, although the reflectives corrected significantly more miscues than the impulsives. In short, it appears that the amount of overt self-correction of miscues needed to adequately comprehend written material may, among other things, be related to the child's cognitive style. More research is needed in this area.

In summary, this study of the oral reading behavior of reflective and impulsive second grade boys has revealed a significant relationship between one aspect of cognitive style and repetition and self-correction behavior which appears to have important implications for teachers, diagnosticians and researchers, as they seek to better understand the role of the child himself in the reading process.

[NOTE: A more detailed report of this study may be found in Butler (2).]

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TABLE 1

ADJUSTED AND UNADJUSTED MEANS AND STANDARD DEVIATIONS FOR THE NUMBER OF REPETITIONS FOR REFLECTIVE AND IMPULSIVE SUBJECTS

		Reflective (N=15)	Impulsive (N=15)	Diff.	F/t
Adjusted	M	36.65	21.81	14.84	F=10.89 *
	SD	14.23	8.26	5.97	
Unadjusted	M	35.47	23.00	12.47	t=-2.93 **
	SD	13.75	7.98	5.77	

*p < .05
**p < .01

TABLE 2

ADJUSTED AND UNADJUSTED MEANS AND STANDARD DEVIATIONS OF THE PERCENTAGE OF MISCUES CORRECTED FOR REFLECTIVE AND IMPULSIVE SUBJECTS

		Reflective (N=15)	Impulsive (N=15)	Diff.	F/t
Adjusted	M	21.04	13.76	7.28	F= 4.75 *
	SD	10.18	6.30	3.88	
Unadjusted	M	21.60	13.20	8.40	t=-2.72 *
	SD	9.80	6.10	3.70	

*p < .05

TABLE 3

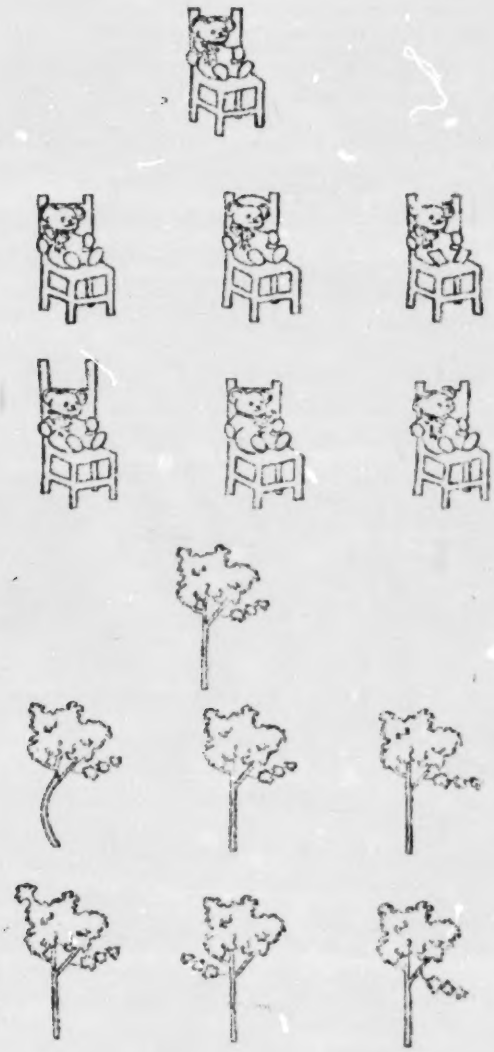
ADJUSTED AND UNADJUSTED MEANS AND STANDARD DEVIATIONS OF THE NUMBER OF ONE-TIME AND TOTAL MISCUES FOR REFLECTIVE AND IMPULSIVE SUBJECTS

		Reflective (N=15)	Impulsive (N=15)	Diff.	F/t
One-Time					
Adjusted	M	82.65	86.28	-3.63	F=0.24 n.s.
	SD	37.76	40.79	-3.03	
Unadjusted	M	79.47	89.47	-10.00	t=0.70 n.s.
	SD	36.48	39.41	-2.93	
Total					
Adjusted	M	88.90	98.64	-9.74	F=0.56 n.s.
	SD	40.81	46.68	-5.87	
Unadjusted	M	86.00	101.53	-15.53	t=0.97 n.s.
	SD	39.42	45.09	-5.67	

n.s. = not significant

APPENDIX A

SAMPLE ITEMS FROM THE MATCHING FAMILIAR FIGURES TEST[1]



[1]Reduced in size. The two sample items above constitute four pages in the actual test, each page 8 1/2" x 11".